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Form MR-REV-att (DOGM – Revise/Amend Change Form)  
(Revised September 14, 2005)

DIV. OF OIL, GAS & MINING

# Application for Mineral Mine Plan Revision or Amendment

<b>Operator:</b>		CASTLE VALLEY STONE, LLC	
<b>Mine Name:</b>		BROWN'S CANYON ROCK QUARRY 1	<b>File Number:</b> M/ 043 / 0017
Provide a detailed listing of all changes to the mining and reclamation plan that will be required as a result of this change. Individually list all maps and drawings that are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise or amend the existing Mining and Reclamation Plan. <b>Include page, section and drawing numbers as part of the description.</b>			
DETAILED SCHEDULE OF CHANGES TO THE MINING AND RECLAMATION PLAN			
			DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Pages The following pages from the text: Table of contents, 6, 8, 9, 11, 14, 15, 16 and 17.
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Exhibits A - Base Map, E - Reclamation Treatments, and F - Geology Map.
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Cover Sheets for Appendices A, B and C.
<input checked="" type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	Surety: Bonding Calculations dated January 29, 2015.
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I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments and obligations, herein.

Jeff Sagers

Print Name

Sign Name, Position

Date

## Return to:

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Division of Oil, Gas and Mining  
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## FOR DOGM USE ONLY:

File #: M/ /

Approved: \_\_\_\_\_

Bond Adjustment: from (\$) \_\_\_\_\_  
to \$ \_\_\_\_\_

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## **R647-4-105 - Maps, Drawings & Photographs**

### **105.1 - Topographic base map, boundaries, pre-act disturbance**

(Map Ref: PARK CIRY EAST QUADRANGLE, UTAH, 7.5 MINUTE SERIES (TOPO))

#### **Base Map Checklist**

(Base Map not less than 1"=2000'.)

- (a) Property boundaries of surface ownership of all lands which are to be affected by the mining operations:

**Exhibit A**  
**Exhibit B**

Exhibit A is the Base Map referenced above, and shows the property boundaries leased by Castle Valley Stone, as provided in the lease from the owner of the land. (Scale of Exhibit A is 1" - 2000')

Exhibit B is an enlargement of the Base Map and shows a more detailed view of the boundaries. Scale of Exhibit B is 1" - 1000')

- (b) Perennial, intermittent, or ephemeral streams, springs and other bodies of water, roads, Buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or bore-holes or other existing surface or subsurface facilities within 500 feet of the proposed mining operations:

**Exhibit B**

Exhibit B shows several structures not indicated on the Base map. There are six temporary structures - three storage containers, one small wood building and two mobile offices. These are removable. There are two gates, both lockable, that block motor vehicle entrance into the mining/quarry area from the hard surface road. A power line has been added by the power company that crosses the Southern part of the property parallel to the hard surface road. A fence has been constructed by the company that has the grazing rights to the property and this fence basically borders the hard surface road on the south and west and ties in the two access gates. The streams to the east and west of the mining/quarry site have water in them during runoff in the spring and rains in the early summer. They are well outside the current mining location. The only standing water is in the pond in the far southeast corner and the stream that crosses the far northeast corner of the property. This pond and the stream are not disturbed by our mining operation. [There are no landing strips or oil and gas pipelines within 500 feet of the permit area.]

Comment [OSG1]: # 5

- (c) Proposed route of access to the mining operations from the nearest publically maintained highway (Map and scale appropriate to show access.

**Exhibit B**

Gated access roads are ~~noted~~ shown on Exhibit B ~~in~~ as brown, dashed lines.

Comment [OSG2]: #6

- (d) Known areas which have been previously impacted by mining or exploration activities within the proposed land affected:

**Exhibit B**

A very vague, unimproved road follows directly under the power line and is used by the power company when maintaining or inspecting the power lines.

- (b) A border clearly outlining the extent of the surface area proposed to be affected by mining operations and the number of acres proposed to be affected: **Exhibit D**

The proposed surface area to be affected by our long mining intent is indicated on Exhibit D, and includes all roads, mining, storage and operating areas. It will be approximately 37.4 total acres.

- (c) The location of known test boring, pits, or core holes.

There are no known existing nor projected test boring pits or core holes.

#### **Reclamation Treatments Map Checklist**

(Reclamation Treatments map ~~scale 1:250'~~ **Exhibit E 1"=500'**.)

Comment [OSG3]: #8

- (a) Areas of the site to receive various reclamation treatments are color coded to identify which reclamation treatments will be applied. In general, reclamation will consist of putting waste rock and subsoil back into the quarried out portions as the quarry face recedes to the west. This will be followed by contouring and smoothing of affected areas with a dozer and re-spreading topsoil and/or composted manure. Areas will be seeded with approved seed mixtures. Final reclamation will consist of re-grading all disturbed areas not previously reclaimed, and applying topsoil or composted manure and seeding. Areas include: **Exhibit E**

- 1) Buildings. Temporary building structures are three storage containers, one small wood building and two mobile offices. These will be removed from the quarry and the areas will be re-graded and ripped, as necessary, then seeded.
- 2) Roads. All roads will be re-graded, fertilized and broadcast seeded. Roads that are devoid of any top soil will be covered with a mixture of soil and manure and overburden. This will then be graded and seeded.
- 3) Topsoil Storage Areas. Topsoil will be removed from the storage areas for various reclamation uses. The storage area will be graded, fertilized and seeded.
- 4) Overburden/Waste Dumps. Overburden that remains after use in other areas of the quarry to augment reclamation will be mixed with manure and the overburden of the site will be smoothed and seeded. One waste dump is currently moving due to up-slope loading. No additional waste will be added to this dump, and Castle Valley Stone will develop a mitigation plan to stop the progress of the waste and submit the plan to the Division with the 2014 annual mine report. **Reclamation of the staging area, between the main gate and scales, will include removal of material as aggregate or relocation of the waste rock to the pit. Final slopes will not exceed 3H:1V and disturbance of the intermittent stream bed near the staging area is not planned.**
- 5) Central Mine Operating Areas. These areas are those that will remain after mining operations cease, not included as roads, storage areas or overburden/waste sites. These areas also include the less than 3H:1V slopes. These areas will be ripped (where feasible) graded, covered with a mixture of top soil, manure and overburden and seeded.

Comment [OSG4]: #7



- 6) Trash/Waste. Any trash or limited waste materials will be kept in metal receptacles and periodically taken to the appropriate dump/landfill site.
- 7) Public Safety and Welfare. The quarry and mining sites are private property and it is not expected that it will become public after mining ceases, thus limiting public access. Currently, a barbed wire fence surrounds the property on three sides. Only the northern portions of the leased property are not fenced. There are two access roads from the hard surface road to the south and both of these roads are gated. The eastern gate is open for daily traffic and is locked after hours (usually 7:00 PM to 7:00 AM) and on Sundays. Danger/Warning and no trespassing signs are posted along the power lines facing the hard surface road and on both access gates. If high walls remain after mining operations have ceased and reclamation is complete, then warning signs will be posted around the high wall with the appropriate hazards identified. During deer hunting season, permission to enter and hunt must be obtained in writing from the Castle Valley Stone, which serves to ensure those hunting on the property know the dangers of the mining operation.

(b) The border outlining the acres to be reclaimed is as shown in **Exhibit E**.  
~~A border clearly outlining the extent of the area to be reclaimed after mining, the number of acres disturbed, and the number of acres proposed for reclamation:~~

**Exhibit E**

~~(d)(c)~~ Areas disturbed by this operation which are included in a request for a variance from the reclamation standards: ~~The rock highwall will not be revegetated, but all other areas of disturbance will be reclaimed and revegetated. No variance from Division rules is requested.~~

**Exhibit E**

Comment [OSG5]: #9

~~(e)(d)~~ Highwalls which are proposed to remain steeper than 45 degrees and slopes which are proposed to remain steeper than 3H:1V.

**Exhibit E**

The overall slope of highwalls will be 45 degrees or less. ~~The maximum height of highwalls will be 80'. Final slope grades of waste piles, overburden stockpiles and areas not characterized as highwalls will be 3H:1V maximum.~~

Comment [OSG6]: #10

### 105.3 – Drawings or Cross Sections (slopes, roads, pads, etc.)

Cross sections of pre-mine and post mine slopes are shown on Exhibit E.

### 105.4 – Photographs

~~No photos have been submitted.~~

Comment [OSG7]: #13

### 105.4 – Underground and Surface Mine Development

There are no current or planned underground operations at the Brown's Canyon Quarry.

to no waste material will be generated by crushing as all rock and gravel material can be sold. Excess unconsolidated fines from crushing may be used as plant growth medium for reclamation. The volume of rock to be crushed will depend on demand for aggregate during the life of the mine. Rock that is presently part of the landslide and waste dumps may be crushed for aggregate. Crushing and screening will be done by a licensed contractor with a valid air quality permit for crushing, or by Castle Valley Stone after obtaining an air quality permit for crushing. Run-of-mine waste may be sold and transported from the quarry and crushed off site under separate permit from the Brown's Canyon Rock Quarry.

**Comment [OSG8]:** #14, Crushing, screening, elevating and other equipment for aggregate is now included in the bond spreadsheet

8. Concurrent Reclamation. Areas disturbed are now smoothed over and cleared of as much debris as feasible. Concurrent reclamation is planned, but not yet active. Our future intent is to use some waste dirt available to smooth and contour those areas that we will not expect to disturb in further operations and are candidate areas for reclamation. Topsoil stockpiles will be seeded periodically with an interim seed mix consisting of ryegrass, crested wheatgrass or a Division recommended seed mix. This will help to control weeds and reduce erosion. Weeds throughout the mine and on the stockpiles will be sprayed in late May or early June of each year.
9. Landslide Area – This area is to be reclaimed concurrently with mining beginning in 2014 and concluding in approximately three years. Castle Valley will remove rock from the top of the slide and process the useable material as described previously in this section. Remaining rock, from the landslide area, if any, will be placed in stable stockpiles or waste dumps. Soils beneath the landslide will be salvaged for use during reclamation. The exposed soils remaining below the slide will be seeded periodically to discourage weeds with either an interim seed mix or approved seed mix for reclamation

#### **106.3 - Estimated acreages disturbed, reclaimed, annually**

(Acreage listed here should match areas measured off the maps provided)

	Current Operation	5 Year Proposal
Areas of actual mining:	16.7 Acres	21.9 Acres
Overburden/waste dumps :	3 Acres	5.5 Acres
Ore and product stockpiles:	4.0 Acres	4.0 Acres
Access/haul roads:	2 Acres	2.0 Acres
Associated on-site preparation facilities:	1 Acres	1 Acres
Tailings Disposal:	0 Acres	0 Acres
Other -Landslide:	3.0 Acres	3.0 Acres
<b>Total Acreage</b>	<b>29.7 Acres</b>	<b>37.4 Acres</b>

#### **106.4 - Nature of materials mined, waste and estimated tonnages**

- (a) Describe the typical annual amount of the ore and waste rock/overburden generated in cubic yards.

the landslide area during reclamation and from the proposed expansion to the east of the current main access road. See Exhibit B for the location of the expansion areas and "Landslide."  
Topsoil stockpiles will be protected from disturbance by seeding interim vegetation, using berms to prevent erosion by storm water and using signs and/or structural controls such as barricade stones to limit disturbance by vehicles or other equipment.

Comment [OSG9]: #15

**106.7 - Existing vegetation - species and amount**

Vegetation - The operator is required to return the land to a useful condition and re-establish at least 70 percent of the pre-mining vegetation ground cover.

Most of the vegetation in the mine area has been disturbed by previous mining activity. The expansion area is primarily vegetated by Gambel Oak stands. The "Rock Products of Utah Vegetation and Soil Baseline Report" identified the vegetation cover of three sample sites to be 19%, 52% and 30% respectively. Rather than conduct a new survey for the expansion, 50% is the estimate for pre-mining vegetation ground cover. The reclamation requirement is that the land be returned to a useful condition with a minimum of 70% of the pre-mining vegetation ground cover. All areas in the mine will be reclaimed with a minimum of 35% vegetation ground cover.

The percent ground cover is determined by sampling the vegetation type(s) on the areas to be mined (see Attachment 1 for suggested sampling methods).

- (a) Vegetation Survey - The following information needs to be completed based upon the vegetation survey:

Sampling Method	Transect-Nested plot
Number of plots or transects (Min 10)	3 Transects – 10 Plots each. Total 30

<u>Ground Cover</u>	<u>Percent</u>
Vegetation (Perennial grass, forb, and shrub cover)	30
Litter	45
Rock/rock fragments	23
Bare Ground	2
	100%

Re-vegetation Requirement  
 (70% of above vegetation figure)

List the predominant perennial species of vegetation growing in each vegetation community type.

Quercus Gambelli (Gambel Oak)	Hahonia Repens (Oregon Grape)
Galium Aparine (Bed Straw)	Elymus Spicata (Wheatgrass)
Poa Pratensis (Bluegrass)	

Note, the original vegetation survey (Appendix A – NRCS Soil Profile Data) prepared in June, 2000 included transects and plots representative of the soils from Gambel Oak stands, which are representative of the current expansion area. (See Appendix A, Page 1, ¶ 7)



- (b) Photographs - The operator may submit photographs (prints) of the site to show existing vegetation conditions. These photographs should show the general appearance and condition of the area to be affected, and may be utilized for comparison upon reclamation of the site. Photographs should be clearly marked as to the location, orientation and the date they were taken. ~~(See Exhibit F for details.)~~

No photos have been submitted.

Comment [OSG10]: #17

#### **106.8 - Depth to groundwater, extent of overburden, geology**

(See Exhibits F and G for details.)

Castle Valley Stone will implement best management practices in controlling erosion and rain water runoff. As rock from the face of highwalls is removed, the exposed pit floors are developed to be flat or slope slightly toward the highwall. Berms along roads limit surface water flow to slopes and reduce the potential for erosion. The Quartzitic Sandstone is also permeable and well fractured, allowing meteoric water to penetrate quickly rather than pool on the surface.

No groundwater has been or is expected to be encountered at the mine site. There are no wells on the lease property. One open pit lies  $\pm 850'$  east of the quarry at an elevation of approximately 6,480' above sea level. It collects occasional meteoric water but is normally dry.

Two of the water rights located within 1 mile of the property have well logs which record the depth to groundwater. Water right E4056 is located approximately  $\frac{1}{2}$  mile northwest of the mine. According to the well log, the depth to groundwater is 125' below the surface at an elevation of approximately 6,455'. The well associated with water right E2793 also recorded groundwater to be 258' below the surface. The approximate elevation of groundwater at this well is 6,562'. See Exhibit G – Water Rights.

There are two large, spring fed ponds located approximately 1,650' to the west of the quarry and the elevation of the surface water is 6,475' above sea level. The bottom of the planned pit floor of the Brown's Canyon Quarry will be 6,650' and no groundwater is expected to be encountered at that elevation.

#### **106.9 - Location & size of ore, waste, tailings, ponds**

- (a) Waste Rock/Overburden Stockpiles. The current and proposed overburden/waste stockpile areas are shown in Exhibit E. Total area is estimated to be about 1,000 ft<sup>2</sup>.
- (b) Removal/Stockpile of Overburden. Overburden is dug from the mining site by a tracked excavator and separated from the useable boulders/rock. It is then moved by a track loader to the overburden/waste storage location for stockpiling.
- (c) Waste Rock. Our waste rock is combined with overburden, a mixture of soil and small rocks (not feasible for sale). It is stockpiled and will be used for filling holes, mixing with composted manure and spreading for cover.
- (d) Other. We do not anticipate tailing facilities, water storage or treatment ponds. Therefore, we have not considered requirements for effluent discharge points (UPDES) and/or the need for any type of water quality analyses or chemical analyses.

#### **647-4-107 - Operation Practices**

(a) Measures taken to minimize hazards to public safety during mining operations:

- 1) Closing or guarding shafts and tunnels - We do not make shafts or tunnels in this type of mining operation, therefore this is not applicable
- 2) Disposal of trash, scrap metal, wood or extraneous debris - This material is collected in metal containers and hauled to the appropriate county dump site.
- 3) Plugging or capping of drill, core or other exploratory holes - On the occasion that we would dig an exploratory pit or hole that may not be used, we would back fill this pit with a mixture of waste rock, overburden, soil and composted manure and smooth over for seeding in this manner we would lessen a possibility of a person accidentally stumbling into the pit.
- 4) Posting of appropriate warning signs in locations of public access to operations – Signs indicating mining/quarry operations are in progress are posted at both entrances. The eastern most entrance from the hard surface road is the only "public access" during operating hours (7:00 AM to 7:00 PM, Monday through Saturday) The gate is closed and locked during non-operating hours and on Sundays. The western access gate to the hard surface road is only for Castle Valley Stone personnel. Also, no trespassing signs are posted along the fence line that borders the hard surface road to the south of the quarry.
- 5) Construction of berms, fences or barriers above highwalls a other excavations – Berms and/or a boulder barrier separate immediate access to the top of the highwall where mining operations take place. Caution signs are posted at the approaches to the highwall drop-off. A berm has been placed around all operating areas, as required by MSHA.

(b) Environmental and erosion measures within mining operations areas:

- 1) Measures taken to avoid or minimize environmental damages to natural drainage channels - Mining is not conducted in channels, stream beds or drainage. They are left to flow naturally.
- 2) Measures taken to control and minimize sediment and erosion on areas affected – Most areas currently being mined are virtually devoid of sediment. The largest amounts of "sediment" are in the loading and maneuver areas at the bottom of the high wall. Operations normally must cease during heavy rains on mow, due to the slick conditions and we do not operate from December through March, when the heaviest and most severe weather occurs, decreasing the possibility of erosion caused by equipment
- 3) Measures being taken to prevent sediment from leaving disturbed area - Berms of rock dirt and overburden are located around the operating areas.
- 4) Potentially deleterious materials that may be stored on site.

- Fuel, oil and grease for equipment



## **R647-4-105 - Maps, Drawings & Photographs**

### **105.1 - Topographic base map, boundaries, pre-act disturbance**

(Map Ref: PARK CIRY EAST QUADRANGLE, UTAH, 7.5 MINUTE SERIES (TOPO))

#### **Base Map Checklist**

(Base Map not less than 1"=2000'.)

- (a) Property boundaries of surface ownership of all lands which are to be affected by the mining operations:

**Exhibit A**  
**Exhibit B**

Exhibit A is the Base Map referenced above, and shows the property boundaries leased by Castle Valley Stone, as provided in the lease from the owner of the land. (Scale of Exhibit A is 1" - 2000')

Exhibit B is an enlargement of the Base Map and shows a more detailed view of the boundaries. Scale of Exhibit B is 1" - 1000')

- (b) Perennial, intermittent, or ephemeral streams, springs and other bodies of water, roads, Buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or bore-holes or other existing surface or subsurface facilities within 500 feet of the proposed mining operations:

**Exhibit B**

Exhibit B shows several structures not indicated on the Base map. There are six temporary structures - three storage containers, one small wood building and two mobile offices. These are removable. There are two gates, both lockable, that block motor vehicle entrance into the mining/quarry area from the hard surface road. A power line has been added by the power company that crosses the Southern part of the property parallel to the hard surface road. A fence has been constructed by the company that has the grazing rights to the property and this fence basically borders the hard surface road on the south and west and ties in the two access gates. The streams to the east and west of the mining/quarry site have water in them during runoff in the spring and rains in the early summer. They are well outside the current mining location. The only standing water is in the pond in the far southeast corner and the stream that crosses the far northeast corner of the property. This pond and the stream are not disturbed by our mining operation. There are no landing strips or oil and gas pipelines within 500 feet of the permit area.

- (c) Proposed route of access to the mining operations from the nearest publically maintained highway (Map and scale appropriate to show access.

**Exhibit B**

Gated access roads are shown on Exhibit B as brown, dashed lines.

- (d) Known areas which have been previously impacted by mining or exploration activities within the proposed land affected:

**Exhibit B**

A very vague, unimproved road follows directly under the power line and is used by the power company when maintaining or inspecting the power lines.

- (b) A border clearly outlining the extent of the surface area proposed to be affected by mining operations and the number of acres proposed to be affected: **Exhibit D**

The proposed surface area to be affected by our long mining intent is indicated on Exhibit D, and includes all roads, mining, storage and operating areas. It will be approximately 37.4 total acres.

- (c) The location of known test boring, pits, or core holes.

There are no known existing nor projected test boring pits or core holes.

#### **Reclamation Treatments Map Checklist**

(Reclamation Treatments map Exhibit E 1"=500'.)

- (a) Areas of the site to receive various reclamation treatments are color coded to identify which reclamation treatments will be applied. In general, reclamation will consist of putting waste rock and subsoil back into the quarried out portions as the quarry face recedes to the west. This will be followed by contouring and smoothing of affected areas with a dozer and re-spreading topsoil and/or composted manure. Areas will be seeded with approved seed mixtures. Final reclamation will consist of re-grading all disturbed areas not previously reclaimed, and applying topsoil or composted manure and seeding. Areas include: **Exhibit E**
- 1) Buildings. Temporary building structures are three storage containers, one small wood building and two mobile offices. These will be removed from the quarry and the areas will be re-graded and ripped, as necessary, then seeded.
  - 2) Roads. All roads will be re-graded, fertilized and broadcast seeded. Roads that are devoid of any top soil will be covered with a mixture of soil and manure and overburden. This will then be graded and seeded.
  - 3) Topsoil Storage Areas. Topsoil will be removed from the storage areas for various reclamation uses. The storage area will be graded, fertilized and seeded.
  - 4) Overburden/Waste Dumps. Overburden that remains after use in other areas of the quarry to augment reclamation will be mixed with manure and the overburden of the site will be smoothed and seeded. One waste dump is currently moving due to up-slope loading. No additional waste will be added to this dump, and Castle Valley Stone will develop a mitigation plan to stop the progress of the waste and submit the plan to the Division with the 2014 annual mine report. Reclamation of the staging area, between the main gate and scales, will include removal of material as aggregate or relocation of the waste rock to the pit. Final slopes will not exceed 3H:1V and disturbance of the intermittent stream bed near the staging area is not planned.
  - 5) Central Mine Operating Areas. These areas are those that will remain after mining operations cease, not included as roads, storage areas or overburden/waste sites. These areas also include the less than 3H:1V slopes. These areas will be ripped (where feasible) graded, covered with a mixture of top soil, manure and overburden and seeded.

- 6) Trash/Waste. Any trash or limited waste materials will be kept in metal receptacles and periodically taken to the appropriate dump/landfill site.
- 7) Public Safety and Welfare. The quarry and mining sites are private property and it is not expected that it will become public after mining ceases, thus limiting public access. Currently, a barbed wire fence surrounds the property on three sides. Only the northern portions of the leased property are not fenced. There are two access roads from the hard surface road to the south and both of these roads are gated. The eastern gate is open for daily traffic and is locked after hours (usually 7:00 PM to 7:00 AM) and on Sundays. Danger/Warning and no trespassing signs are posted along the power lines facing the hard surface road and on both access gates. If high walls remain after mining operations have ceased and reclamation is complete, then warning signs will be posted around the high wall with the appropriate hazards identified. During deer hunting season, permission to enter and hunt must be obtained in writing from the Castle Valley Stone, which serves to ensure those hunting on the property know the dangers of the mining operation.

(b) The border outlining the acres to be reclaimed is as shown in **Exhibit E**.

(c) Areas disturbed by this operation which are included in a request for a variance from the reclamation standards: The rock highwall will not be revegetated, but all other areas of disturbance will be reclaimed and revegetated. No variance from Division rules is requested. **Exhibit E**

(d) Highwalls which are proposed to remain steeper than 45 degrees and slopes which are proposed to remain steeper than 3H:1V. **Exhibit E**

The overall slope of highwalls will be 45 degrees or less. The maximum height of highwalls will be 80'. Final slope grades of waste piles, overburden stockpiles and areas not characterized as highwalls will be 3H:1V maximum.

#### **105.3 – Drawings or Cross Sections (slopes, roads, pads, etc.)**

Cross sections of pre-mine and post mine slopes are shown on Exhibit E.

#### **105.4 – Photographs**

No photos have been submitted.

#### **105.4 – Underground and Surface Mine Development**

There are no current or planned underground operations at the Brown's Canyon Quarry.



to no waste material will be generated by crushing as all rock and gravel material can be sold. Excess unconsolidated fines from crushing may be used as plant growth medium for reclamation. The volume of rock to be crushed will depend on demand for aggregate during the life of the mine. Rock that is presently part of the landslide and waste dumps may be crushed for aggregate. Crushing and screening will be done by a licensed contractor with a valid air quality permit for crushing, or by Castle Valley Stone after obtaining an air quality permit for crushing. Run-of-mine waste may be sold and transported from the quarry and crushed off site under separate permit from the Brown's Canyon Rock Quarry.

8. Concurrent Reclamation. Areas disturbed are now smoothed over and cleared of as much debris as feasible. Concurrent reclamation is planned, but not yet active. Our future intent is to use some waste dirt available to smooth and contour those areas that we will not expect to disturb in further operations and are candidate areas for reclamation. Topsoil stockpiles will be seeded periodically with an interim seed mix consisting of ryegrass, crested wheatgrass or a Division recommended seed mix. This will help to control weeds and reduce erosion. Weeds throughout the mine and on the stockpiles will be sprayed in late May or early June of each year.
9. Landslide Area – This area is to be reclaimed concurrently with mining beginning in 2014 and concluding in approximately three years. Castle Valley will remove rock from the top of the slide and process the useable material as described previously in this section. Remaining rock, from the landslide area, if any, will be placed in stable stockpiles or waste dumps. Soils beneath the landslide will be salvaged for use during reclamation. The exposed soils remaining below the slide will be seeded periodically to discourage weeds with either an interim seed mix or approved seed mix for reclamation.

#### **106.3 - Estimated acreages disturbed, reclaimed, annually**

(Acreage listed here should match areas measured off the maps provided)

	Current Operation		5 Year Proposal	
Areas of actual mining:	16.7	Acres	21.9	Acres
Overburden/waste dumps :	3	Acres	5.5	Acres
Ore and product stockpiles:	4.0	Acres	4.0	Acres
Access/haul roads:	2	Acres	2.0	Acres
Associated on-site preparation facilities:	1	Acres	1	Acres
Tailings Disposal:	0	Acres	0	Acres
Other -Landslide:	3.0	Acres	3.0	Acres
<b>Total Acreage</b>	<b>29.7</b>	<b>Acres</b>	<b>37.4</b>	<b>Acres</b>

#### **106.4 - Nature of materials mined, waste and estimated tonnages**

- (a) Describe the typical annual amount of the ore and waste rock/overburden generated in cubic yards.

the landslide area during reclamation and from the proposed expansion to the east of the current main access road. See Exhibit B for the location of the expansion areas and “Landslide.” Topsoil stockpiles will be protected from disturbance by seeding interim vegetation, using berms to prevent erosion by storm water and using signs and/or structural controls such as barricade stones to limit disturbance by vehicles or other equipment.

#### **106.7 - Existing vegetation - species and amount**

Vegetation - The operator is required to return the land to a useful condition and re-establish at least 70 percent of the pre-mining vegetation ground cover.

Most of the vegetation in the mine are has been disturbed by previous mining activity. The expansion area is primarily vegetated by Gambel Oak stands. The “Rock Products of Utah Vegetation and Soil Baseline Report” identified the vegetation cover of three sample sites to be 19%, 52% and 30% respectively. Rather than conduct a new survey for the expansion, 50% is the estimate for pre-mining vegetation ground cover. The reclamation requirement is that the land be returned to a useful condition with a minimum of 70% of the pre-mining vegetation ground cover. All areas in the mine will be reclaimed with a minimum of 35% vegetation ground cover.

The percent ground cover is determined by sampling the vegetation type(s) on the areas to be mined (see Attachment 1 for suggested sampling methods).

- (a) Vegetation Survey - The following information needs to be completed based upon the vegetation survey:

Sampling Method	Transect-Nested plot
Number of plots or transects (Min 10)	3 Transects – 10 Plots each. Total 30
<u>Ground Cover</u>	<u>Percent</u>
Vegetation (Perennial grass, forb, and shrub cover)	30
Litter	45
Rock/rock fragments	23
Bare Ground	2
	100%

Re-vegetation Requirement  
(70% of above vegetation figure)

List the predominant perennial species of vegetation growing in each vegetation community type.

Querus Gambelli (Gambel Oak)	Hahonia Repens (Oregon Grape)
Galium Aparine (Bed Straw)	Elymus Spicata (Wheatgrass)
Poa Pratensis (Bluegrass)	

Note, the original vegetation survey (Appendix A – NRCS Soil Profile Data) prepared in June, 2000 included transects and plots representative of the soils from Gambel Oak stands, which are representative of the current expansion area. (See Appendix A, Page 1, ¶ 7)

- (b) Photographs - The operator may submit photographs (prints) of the site to show existing vegetation conditions. These photographs should show the general appearance and condition of the area to be affected, and may be utilized for comparison upon reclamation of the site. Photographs should be clearly marked as to the location, orientation and the date they were taken.

No photos have been submitted.



### **106.8 - Depth to groundwater, extent of overburden, geology**

(See Exhibits F and G for details.)

Castle Valley Stone will implement best management practices in controlling erosion and rain water runoff. As rock from the face of highwalls is removed, the exposed pit floors are developed to be flat or slope slightly toward the highwall. Berms along roads limit surface water flow to slopes and reduce the potential for erosion. The Quartzitic Sandstone is also permeable and well fractured, allowing meteoric water to penetrate quickly rather than pool on the surface.

No groundwater has been or is expected to be encountered at the mine site. There are no wells on the lease property. One open pit lies  $\pm 850'$  east of the quarry at an elevation of approximately 6,480' above sea level. It collects occasional meteoric water but is normally dry.

Two of the water rights located within 1 mile of the property have well logs which record the depth to groundwater. Water right E4056 is located approximately  $\frac{1}{2}$  mile northwest of the mine. According to the well log, the depth to groundwater is 125' below the surface at an elevation of approximately 6,455'. The well associated with water right E2793 also recorded groundwater to be 258' below the surface. The approximate elevation of groundwater at this well is 6,562'. See Exhibit G – Water Rights.

There are two large, spring fed ponds located approximately 1,650' to the west of the quarry and the elevation of the surface water is 6,475' above sea level. The bottom of the planned pit floor of the Brown's Canyon Quarry will be 6,650' and no groundwater is expected to be encountered at that elevation.

### **106.9 - Location & size of ore, waste, tailings, ponds**

- (a) Waste Rock/Overburden Stockpiles. The current and proposed overburden/waste stockpile areas are shown in Exhibit E. Total area is estimated to be about 1,000 ft<sup>2</sup>.
- (b) Removal/Stockpile of Overburden. Overburden is dug from the mining site by a tracked excavator and separated from the useable boulders/rock. It is then moved by a track loader to the overburden/waste storage location for stockpiling.
- (c) Waste Rock. Our waste rock is combined with overburden, a mixture of soil and small rocks (not feasible for sale). It is stockpiled and will be used for filling holes, mixing with composted manure and spreading for cover.
- (d) Other. We do not anticipate tailing facilities, water storage or treatment ponds. Therefore, we have not considered requirements for effluent discharge points (UPDES) and/or the need for any type of water quality analyses or chemical analyses.

## **647-4-107 - Operation Practices**

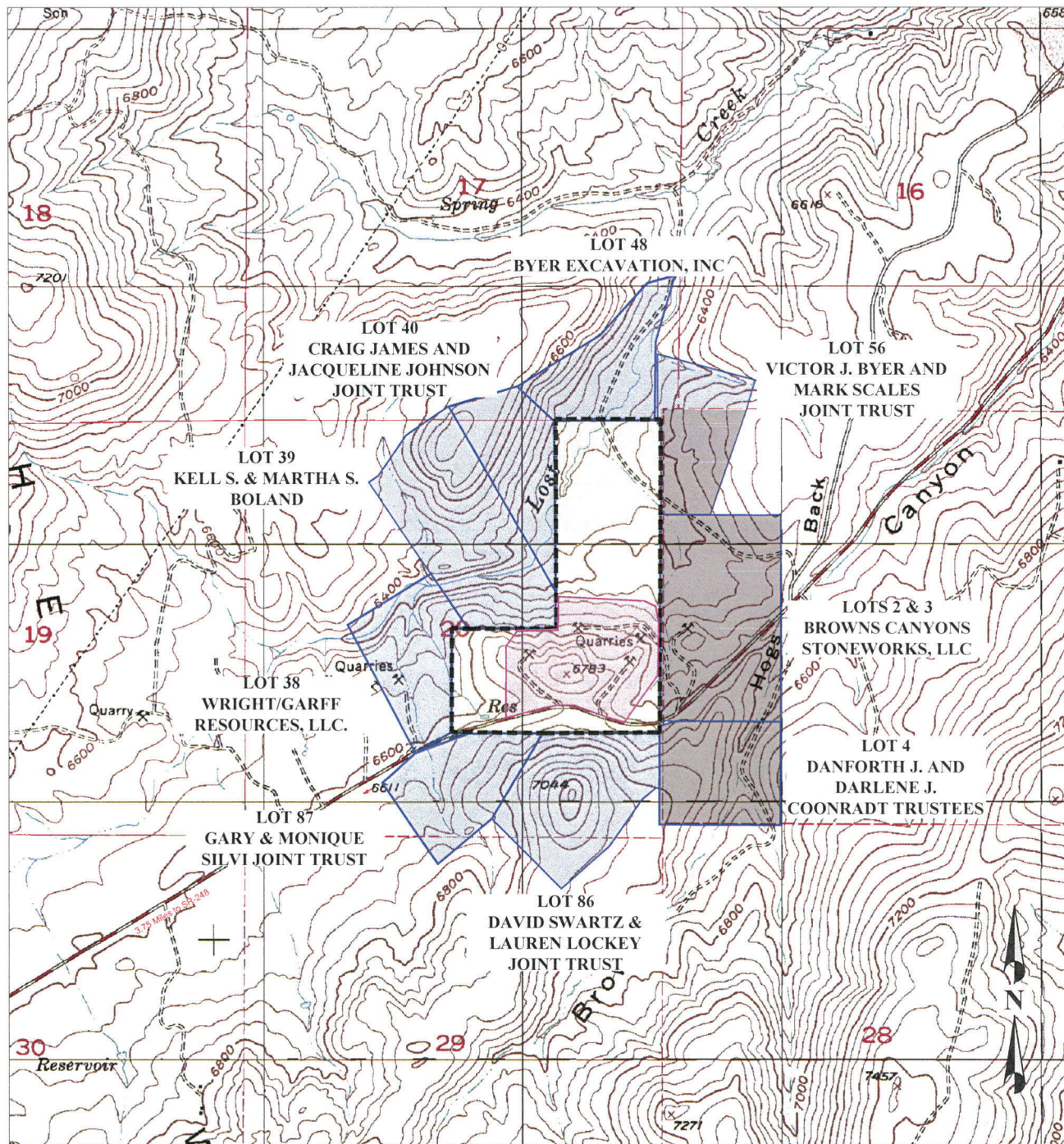
(a) Measures taken to minimize hazards to public safety during mining operations:

- 1) Closing or guarding shafts and tunnels - We do not make shafts or tunnels in this type of mining operation, therefore this is not applicable.
- 2) Disposal of trash, scrap metal, wood or extraneous debris - This material is collected in metal containers and hauled to the appropriate county dump site.
- 3) Plugging or capping of drill, core or other exploratory holes - On the occasion that we would dig an exploratory pit or hole that may not be used, we would back fill this pit with a mixture of waste rock, overburden, soil and composted manure and smooth over for seeding in this manner we would lessen a possibility of a person accidentally stumbling into the pit.
- 4) Posting of appropriate warning signs in locations of public access to operations – Signs indicating mining/quarry operations are in progress are posted at both entrances. The eastern most entrance from the hard surface road is the only "public access" during operating hours (7:00 AM to 7:00 PM, Monday through Saturday). The gate is closed and locked during non-operating hours and on Sundays. The western access gate to the hard surface road is only for Castle Valley Stone personnel. Also, no trespassing signs are posted along the fence line that borders the hard surface road to the south of the quarry.
- 5) Construction of berms, fences or barriers above highwalls a other excavations – Berms and/or a boulder barrier separate immediate access to the top of the highwall where mining operations take place. Caution signs are posted at the approaches to the highwall drop-off. A berm has been placed around all operating areas, as required by MSHA.

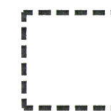
(b) Environmental and erosion measures within mining operations areas:

- 1) Measures taken to avoid or minimize environmental damages to natural drainage channels - Mining is not conducted in channels, stream beds or drainage. They are left to flow naturally.
- 2) Measures taken to control and minimize sediment and erosion on areas affected – Most areas currently being mined are virtually devoid of sediment. The largest amounts of "sediment" are in the loading and maneuver areas at the bottom of the high wall. Operations normally must cease during heavy rains on mow, due to the slick conditions and we do not operate from December through March, when the heaviest and most severe weather occurs, decreasing the possibility of erosion caused by equipment.
- 3) Measures being taken to prevent sediment from leaving disturbed area - Berms of rock dirt and overburden are located around the operating areas.
- 4) Potentially deleterious materials that may be stored on site.

- Fuel, oil and grease for equipment



## LEGEND



**CASTLE VALLEY STONE  
LEASED PROPERTY  
PRIVATE SURFACE AND  
MINERALS**



**PRIVATE SURFACE AND  
MINERALS**



**PRIVATE SURFACE  
PRIVATE MINERALS  
EXCEPT COAL**



**PERMIT AREA**



1" = 2,000'

Base Map: Park City East Quadrangle, Utah  
7.5 Minute series

**CASTLE VALLEY STONE, LLC**

**Brown's Canyon Rock Quarry**

**EXHIBIT A - BASE MAP**

T1S, R5E

Summit County, Utah

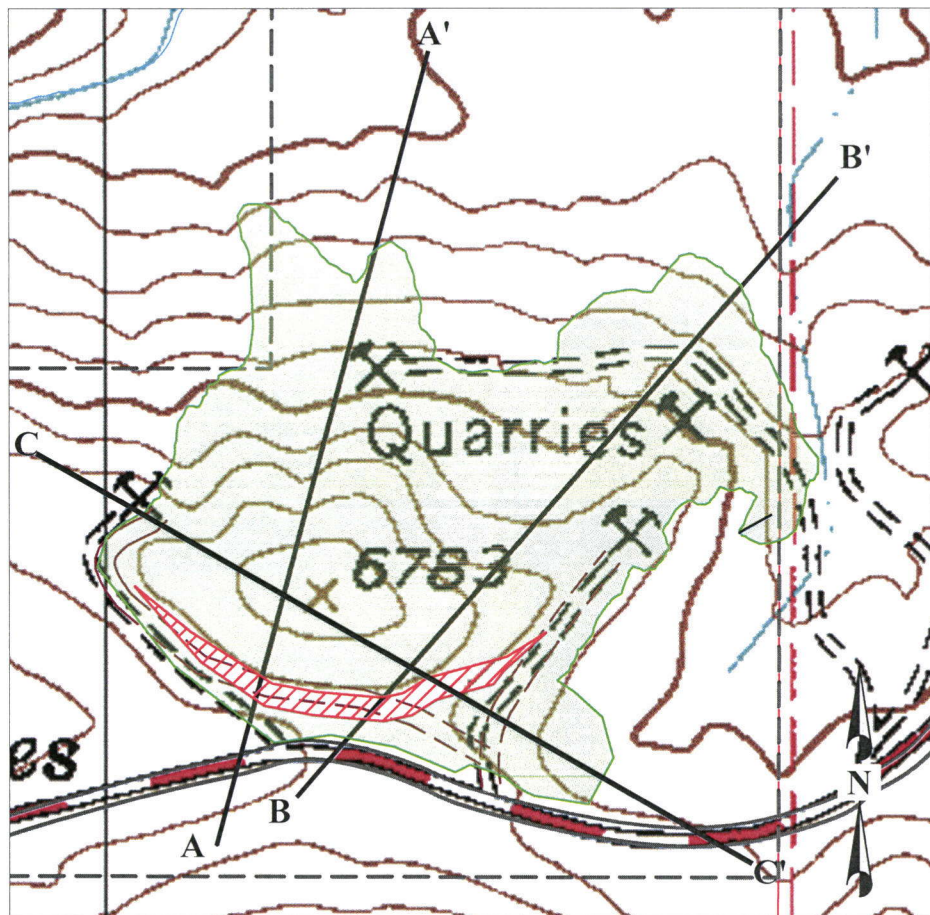
Revised: 2/12/2015

BCRQ\_Ex\_A

Map By:  
NORTH AMERICAN MINE SERVICES, INC.  
447 N 300 W, Suite 3  
Kaysville, UT 84037  
801-544-3421







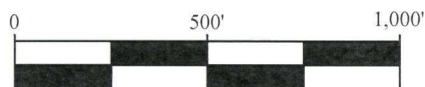
## LEGEND



AREA TO BE RECLAIMED  
MAX SLOPE 3H:1V  
REPLACE 6-12" TOPSOIL FROM 53,000CY STOCKPILE  
AMEND SOIL WITH MANURE AS NECESSARY  
SEED PER APPROVED SEEDING MIX [110.5(C)]

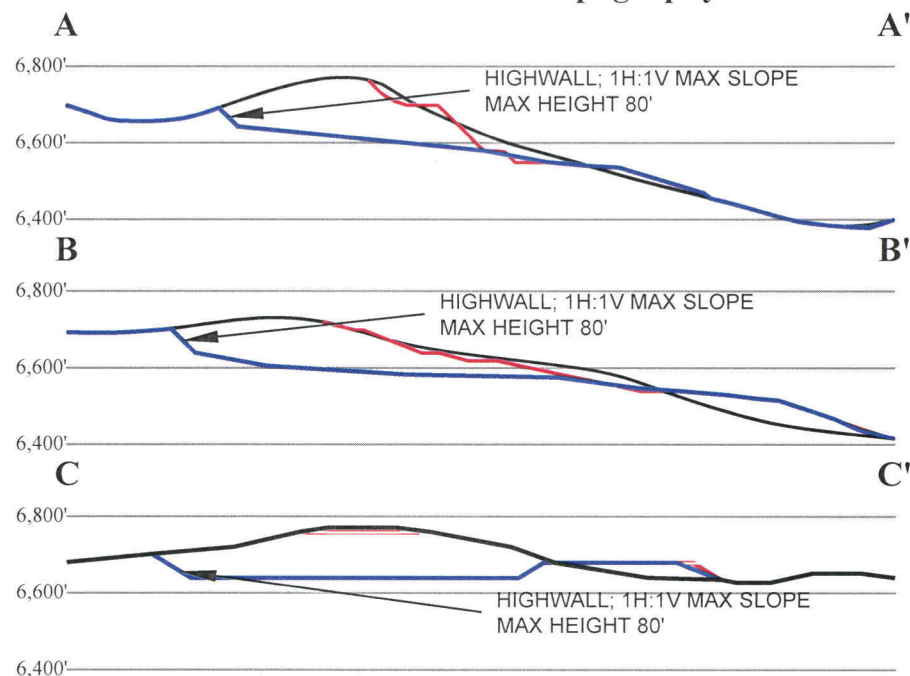


HIGH WALL AREA  
MAX SLOPE 1H:1V  
NO SOIL OR SEEDING REQUIRED



Base Map: Park City East Quadrangle, Utah  
7.5 Minute series

## Cross Sections - Pit Topography



— Premine Topography — Postmine Topography  
— Current (2014) Topography

CASTLE VALLEY STONE, LLC

Brown's Canyon Rock Quarry

EXHIBIT E - RECLAMATION TREATMENTS

T1S, R5E

Summit County, Utah

Revised: 1/28/2015

BCRQ\_Ex\_E

Map By:  
NORTH AMERICAN MINE SERVICES, INC.  
447 N 300 W, Suite 3  
Kaysville, UT 84037  
801-544-3421





EXPLANATION  
Map and Symbols Projected From:  
Geologic Map of the Park City East Quadrangle, Summit and Wasatch Counties, Utah  
by  
Calvin S. Bromfield and Max D. Crittenden, Jr.  
1971

Qal Qls

Surficial deposits

Qal, alluvium along larger drainages  
Qls, landslide deposits

Qoa Qm

Alluvium and glacial deposits

Qoa, older alluvium; generally forms  
terraces adjacent to larger drainages,  
and caps high surfaces' near Weber River  
just northeast of the map area. Not  
necessarily all of same age  
Qm, glacial moraine

Tkn  
Tkt  
Tkrf  
Tksh  
Tkp  
m  
Tksc  
eg  
em  
+

Breccias, tuff, and flows

Tkn, andesite of ridges along Neel Hollow; dark  
andesite flows and breccias forming the uppermost  
volcanic unit in the quadrangle

Tkt, andesitic flow of Todd Hollow; deep-red-brown-  
or blue-gray-weathering andesitic flow and  
associated breccia, with scattered  
plagioclase phenocrysts as much as 5mm in size  
Tkrf, Rhyodacitic Rocks east of Richardson Flat;  
dark-gray hornblende rhyodacitic flows and  
subordinate breccia

Tksh, rhyodacitic rocks north of Sage Hen Hollow;  
medium-gray hornblende-biotite rhyodacitic flows.  
Tkp, tuffs north and east of Mountain Meadows  
interbedded light-yellow and yellowish gray fine  
grained tuff, volcanic gravels, and thin lahars, in  
part probably deposited in a lake or reworked by  
streams. Interbedded and intertonguing upward  
into coarser breccias of Silver Creek (Tksc). In  
part equivalent to the Peoa Tuff of Willes (1962) 1  
m marker- bed

Tksc, breccia of Silver Creek; chiefly light gray  
rhyodacitic to andesitic volcanic breccia, but also  
a few interbedded tuffs; in places the breccias are  
coarse and blocks from 50 to 200 tons are common  
... In part breccias are monolithologic and in  
places heterolithologic. Flow breccias in part, but  
probably laharic breccias more common. Similar  
to and probably equivalent in part to the volcanic  
breccia of Coyote Canyon to the south in the  
Heber quadrangle.

m, marker bed

Exotic blocks, principally of extensively brecciated  
Mesozoic sedimentary rocks. Larger areas shown  
by triangle overprint and formation:

en, Nugget Sandstone

eu, upper member of Ankareh Formation

eg, Garta Grit Member of Ankareh Formation

em, Mahogany Member of Ankareh Formation

ea, red beds of Ankareh Formation

undifferentiated

et, Thaynes Formation

ew, Weber Quartzite

+, smaller exotic block undifferentiated

Tkpp Tkb a

Intrusive rocks

Tkpp, rhyodacite porphyry of Park Premier stock;  
dark- to light-gray and greenish-gray  
hornblende rhyodacite containing abundant  
phenocrysts of plagioclase, hornblende, biotite,  
and a little pyroxene. To the southeast the  
phenocrysts are generally 1 mm Ø' less in size;  
to the northeast 2- to 3- mm phenocrysts are  
common. Unit may include some extrusive  
equivalents

Tkb, rhyodacite porphyry of Bone Hollow;  
dark-gray- to gray-green hornblende biotite  
rhyodacite porphyry. Phenocrysts generally are  
larger than in the rhyodacite porphyry of Park  
Premier stock; Unit possibly is only a textural  
variety of that stock

a, dikes of andesitic to rhyodacitic composition with  
hornblende and feldspar phenocrysts

QUATERNARY

TERTIARY

Upper Triassic

Lower Triassic

Jtc

Twin Creek Limestone

Olive-drab-weathering pencil-jointed dense  
limestone

Jrn

Nugget Sandstone

Pale-orange medium-grained crossbedded  
sandstone

Tau

Teg

Tam

Ankareh Formation

Tau, upper member: moderate-red, grayish-  
red, and grayish-purple mudstone and fine-  
grained sandstone

Teg, Garta Grit Member: white to pale-purple  
massive crossbedded coarse-grained to peb-  
bly quartzite

Tam, Mahogany Member: purplish-gray and  
pale-red ripple-laminated sandstone, pur-  
plish mudstone, and a few thin limestone  
beds

Tt

Thaynes Formation

Brown-weathering fine-grained limy sand-  
stone and siltstone, interbedded with olive-  
green to dull-red shale and gray fine-grained  
fossiliferous limestone

TW

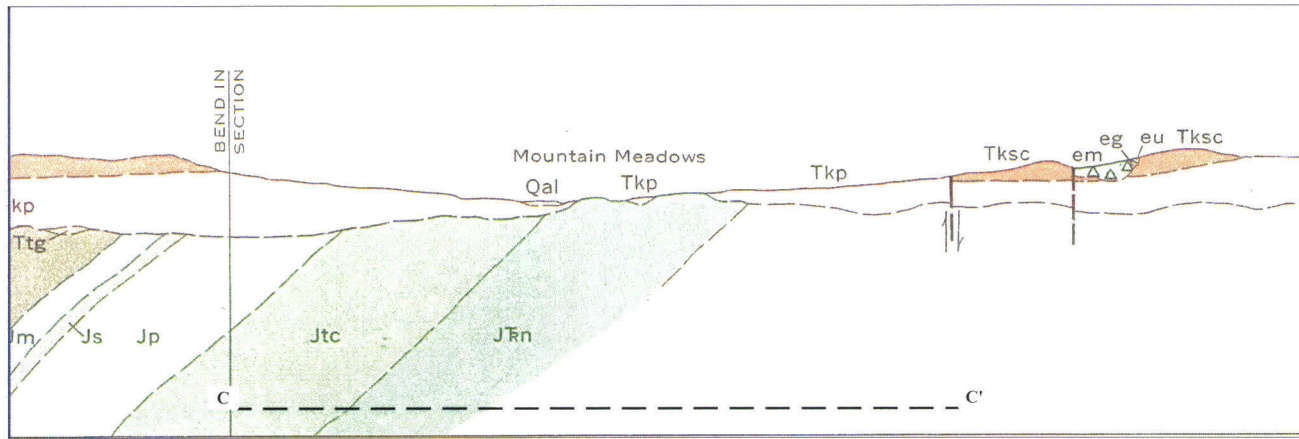
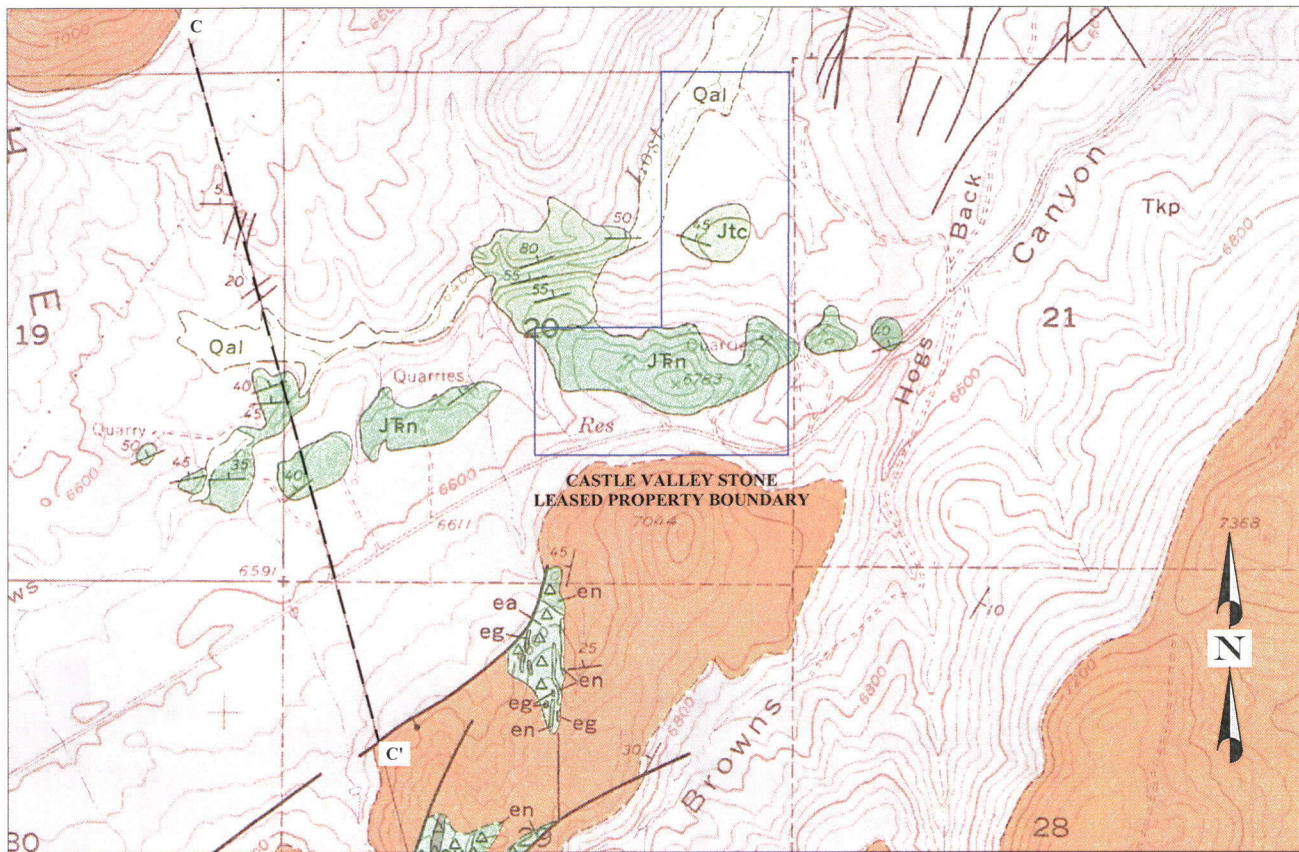
Woodside Shale

Dark- and purplish-red shale, siltstone, and  
very fine grained sandstone

JURASSIC

TRIASSIC (?) AND  
JURASSIC (?)

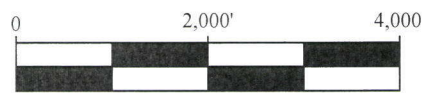
TRIASSIC



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1" = 2,000'

Base Map: Park City East Quadrangle, Utah  
7.5 Minute series

CASTLE VALLEY STONE, LLC

Brown's Canyon Rock Quarry

EXHIBIT F - Geologic Map

T1S, R5E

Summit County, Utah

Revised: 1/28/2015

BCRQ\_Ex\_F

Map By:  
NORTH AMERICAN MINE SERVICES, INC.  
447 N 300 W, Suite 3  
Kaysville, UT 84037  
801-544-3421





**APPENDIX C**

**ROCK PRODUCTS OF UTAH  
VEGETATION AND SOIL BASELINE REPORT**

**Prepared for**

**Rock Products of Utah  
843 South Main Street  
Heber, UT 84032**

**Prepared by**

**Western Wetland Systems  
1625 Palomino Circle  
Heber, UT 84032**

**June 2000**

APPENDIX A

NRCS SOIL PROFILE DATA

APPENDIX B

COE DATA SHEETS

Castle Valley Stone, LLC

Revised January 29, 2015

Brown's Canyon Rock Quarry M/043/0017

**Bonding Calculations**

Prepared by: Oren Gatten  
North American Exploration, Inc.

**Direct Costs**

Subtotal Demolition and Removal	\$7,472.00	
Subtotal Backfilling and Grading	\$65,929.00	
Subtotal Revegetation	<u>\$37,400.00</u>	
<b><u>Subtotal Direct Costs</u></b>	<b><u>\$110,801.00</u></b>	

**Indirect Costs**

Mob/Demob	\$11,080.00	10.0%
Contingency	\$5,540.00	5.0%
Engineering Redesign	\$2,770.00	2.5%
Main Office Expense	\$7,534.00	6.8%
Project Management Fee	\$2,770.00	2.5%
Subtotal Indirect Costs	<u>\$29,694.00</u>	

<b><u>Total Cost 2015</u></b>	<b><u>\$140,495.00</u></b>	
-------------------------------	----------------------------	--

Number of Years	5	
Escalation Factor	0.015	

Reclamation Cost Escalated	\$151,353.00	
Total Acres of Disturbance	29.50	Acres
Average Cost per Acre Disturbed	\$5,131.00	\$ / Acre

**Bond Amount (Rounded to nearest \$1,000)**  
**2020 Dollars**

**\$151,000.00**

Mine Operator: Castle Valley Stone  
Mine Name: **Brown's Canyon Rock Quarry 1**

SUMMIT COUNTY, UTAH

North American Exploration, Inc

DIV. OF OIL, GAS & MINING

January 29, 2015

[illegible]

RECLAMATION SURETY ESTIMATE  
Mine Operator: Castle Valley Stone  
Mine Name: **Brown's Canyon Rock Quarry 1**  
DOGM file Number: **M/043/0017**      SUMMIT COUNTY, UTAH  
Prepared by: Oren Gatten  
North American Exploration, Inc

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Last Revision      January 29, 2015

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	Description	Materials	RSMeans Reference #	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell	Quantity	Unit	Cost
Front End Loader																				
	Delivery to Heber, Utah 48 Mile Round Trip	Transport Trailer	01 52 13 20 0800	\$12.10	Mile													48	Mile	\$581
	Disposal of Material	Diamond K Waste 2214 S 670 W Heber, UT 84032 (435) 654-2321	Salvage/Recycling Center	\$0.00	Metal Trailer													1	Metal	\$0
Aggregate Conveyors (2 Pcs.)																				
	Delivery to Heber, Utah Two Trips, 48 Mile Round Trip for each Conveyor	Transport Conveyors	01 52 13 20 0800	\$12.10	Mile													96	Mile	\$1,162
	Disposal of Material	Diamond K Waste 2214 S 670 W Heber, UT 84032 (435) 654-2321	Salvage/Recycling Center	\$0.00	Metal Trailer													1	Metal	\$0
Portable Vibratory Screen																				
	Delivery to Heber, Utah 48 Mile Round Trip	Transport Screen	01 52 13 20 0800	\$12.10	Mile													48	Mile	\$581
	Disposal of Material	Diamond K Waste 2214 S 670 W Heber, UT 84032 (435) 654-2321	Salvage/Recycling Center	\$0.00	Metal Trailer													1	Metal	\$0
Jaw Crusher																				
	Delivery to Heber, Utah 48 Mile Round Trip	Transport Jaw Crusher	01 52 13 20 0800	\$12.10	Mile													48	Mile	\$581
	Disposal of Material	Diamond K Waste 2214 S 670 W Heber, UT 84032 (435) 654-2321	Salvage/Recycling Center	\$0.00	Metal Trailer													1	Metal	\$0
Gates and Access Controls																				
	Gates Will Remain per Landowner Requirement																			\$0

Total Demolition and Disposal      \$7,472



RECLAMATION SURETY ESTIMATE

Mine Operator: Castle Valley Stone

Mine Name: Brown's Canyon Rock Quarry 1

DOGM file Number: M/043/0017 SUMMIT COUNTY, UTAH

Prepared by: Oren Gatten

North American Exploration, Inc

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FEB 20 2015

Last Revision January 29, 2015

DIV. OF OIL, GAS & MINING

	Description	Materials	RSMeans Reference #	Unit Cost	Unit	Length	Width	Height	Diameter	Acres	Volume	Weight	Density	Time	Number	Unit	Swe II	Quantity	Unit	Cost
Earth Work																				
Backfilling and Grading																				
Site Reclamation																				
	Rip Roads 24" deep with Dozer and 3 Ripping Teeth, 3 passes totaling 7.4cy ripping per 100' of road.	Ripping, Till, Medium Hard, 300Hp Dozer, Adverse Conditions.	31 23 16 32 0020	\$4.32	B.C.Y.										37	B.C.Y.		37	B.C.Y.	\$160
	Topsoil Distribution Over 30.1 Acres (Total disturbance less 3.0 acres of soil stockpiles, 1.3 acres highwall and 3.0 acres of landslide), 9" Average Depth	Dozer, 300 H.P., 300' Haul, Common Earth	31 23 23 14 5420	\$2.18	B.C.Y.					37.4					30,169	B.C.Y.		30,169	B.C.Y.	\$65,769

Total Backfilling and Grading \$65,929

RECLAMATION SURETY ESTIMATE

Mine Operator: Castle Valley Stone

Mine Name: Brown's Canyon Rock Quarry 1

DOGM file Number: M/043/0017 SUMMIT COUNTY, UTAH

Prepared by: Oren Gatten

North American Exploration, Inc

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FEB 20 2015

DIV. OF OIL, GAS & MINING

Last Revision January 29, 2015

	Description	Materials	Means Reference Number	Unit Cost	Unit	Length	Width	Height	Diameter	Area	Volume	Weight	Density	Time	Number	Unit	Swell	Quantity	Unit	Cost
Revegetation - Amendments and Reseeding																				
	DOGM Revegetation	\$1,000/Acre Standard		\$1,000.00	Acre										37.4	Acre		37.4	Acre	\$37,400

Total Revegetation, Amendments and Reseeding \$37,400